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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,771	01/08/2002	Matthew Boyd	7373/72556	6313
22242	7590	02/05/2004	EXAMINER	
FITCH EVEN TABIN AND FLANNERY 120 SOUTH LA SALLE STREET SUITE 1600 CHICAGO, IL 60603-3406			FISCHER, JUSTIN R	
			ART UNIT	PAPER NUMBER
			1733	

DATE MAILED: 02/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/038,771

Applicant(s)

BOYD ET AL.

Examiner

Justin R Fischer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 30, 42 and 43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 and 31-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8 and 9. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-29 and 31-41, drawn to a method of making a preform, classified in class 156, subclass 62.2.
 - II. Claims 30, 42, and 43, drawn to a preform and a molded product incorporating said preform, classified in class 428, subclass 113.
2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product can be made by a materially different method, for example one in which no binder is used. Also, the product can be made without a support surface (e.g. the reinforcing material and binder can be directly applied to a screen). It is further noted that a product defined by the process by which it can be made is still a product claim (In re Bridgeford, 357 F.2d 679, 149 USPQ 55 (CCPA 1966)) and can be restricted from the process. See MPEP §806.05(f).
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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4. During a telephone conversation with Kendrew Colton on January 8, 2004 a provisional election was made with traverse to prosecute the invention of a method of making a preform, claims 1-29 and 31-41. Affirmation of this election must be made by applicant in replying to this Office action. Claims 30, 42, and 43 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5, 7-15, 20-22, 31-34, 38, 39, and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Hall (US 5,579,998). As best depicted in Figures 1 and 2, Hall teaches a method of coating a support surface or substrate comprising the steps of providing reinforcing material, providing binder or liquid resin, mixing said reinforcing material and said binder so as to fully wet the reinforcing material, applying a stream of the mixture to said substrate, and curing or solidifying the coated substrate (Column 2, Lines 27-38 and Column 6, Line 59 - Column 7, Line 4, Column 7, Lines 25-33). In this instance, the coated substrate, after curing, is being viewed as the preform.

Regarding claims 2, 3, 32, and 33, the method of Hall fails to include forced air at the surface of the substrate or a plenum system. The gaseous stream that carries the reinforcing material is not seen to constitute "forced air at the support surface".

With respect to claim 4, as depicted in Figures 1 and 2, the mixture is sprayed against the support surface or substrate.

As to claims 5, 7, and 31, Hall suggests the use of fibrous material (analogous to chopped fibers) as the reinforcing material (Column 1, Lines 15-20).

Regarding claim 8, the resin or binder material is transferred through cylinder 12 and emitted as a stream through nozzle 1.

With respect to claims 9, 10, 13, 14, and 34, Hall suggests that the resin or binder can be heated (i.e. conditioned) while in the resin supply or during the transporting step to the substrate, both of which are prior to mixing with the reinforcing material.

Regarding claims 11 and 12, both the reinforcing material and the binder (plurality of streams) are supplied as a stream to a region adjacent the nozzle 1, at which time the components are mixed and disposed against the substrate.

As to claims 15 and 17, Hall suggests the following heating techniques: while said binder is in supply holding means, during circulation through lines, or in the cylinder itself (Column 6, Lines 39-45). Thus, the binder and reinforcing material are mixed while heat is applied if the binder is heated while it is in the cylinder (mixing of components occurs at end of cylinder).

With respect to claims 20-22, 38, 39, and 41, as depicted in Figures 1 and 2, the binder/reinforcing material mixture is applied to a "vertical support surface" or substrate at ambient air conditions. The term "substrate" in Hall is seen to comprise a "solid support surface".

Regarding claim 31, the reinforcing material of Hall can be fibrous (Column 1, Lines 15-20). Also, Hall broadly suggests the use of a substrate, which is seen to include the formation of "structural parts", especially in view of a suggested use in aerospace hardware (Column 8, Lines 45-48).

7. Claims 1-8, 11, 12, 20-23, 26, 31-33, and 37-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Kelman (US 5,413,750). As best depicted in Figure 1, a combination of binder 25 and reinforcing material 19 is sprayed against a support surface or fabric layer 40. After depositing the above noted mixture against the fabric layer, the binder is allowed to cure or solidify before removal.

Regarding claims 2, 3, 32, and 33, the suction fan of Kelman is not seen to constitute "forced air at the support surface" or a "plenum system".

With respect to claim 4, as noted above, the reinforcing material and the binder are applied (sprayed) concurrently against the support surface.

Regarding claims 5-7, and 37, Kelman discloses the use of chopped fiberglass (Column 1, 40-50).

As to claims 8, 11, and 12, Figure 1 clearly depicts a stream of binder material 25 and a stream of reinforcing material 19 (represents a plurality of streams).

With respect to claims 20-22, 38, 39, and 41, the support surface of Kelman (preformed glass fabric layer) is seen to constitute a "vertical support surface" upon which said mixture is applied at ambient temperature.

Regarding claims 23 and 40, Kelman describes the support surface as a glass fabric material, such as a woven roving or a scrim (Column 1, Lines 40-50). These

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support surfaces are seen to constitute a surface having apertures or a perforated surface.

With respect to claim 26, Kelman suggests the placement of a fiber preform into a mold, at which point a resinous plastic is injected to form the final composite article (Column 1, Lines 10-20).

As to claim 31, Kelman is directed to the manufacture of thermoplastic molded objects, which are seen to constitute "structural parts".

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-29, and 31-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barron (US 6,030,575) and further in view of Kelman. Barron discloses a method of forming a preform comprising spraying reinforcing material and binder onto a screen (during spraying, components become mixed), wherein said binder material is heated just prior to contacting the reinforcing material. In this instance, though, the components are directly sprayed onto the screen- there is no support surface. One of ordinary skill in the art at the time of the invention would have found it obvious to include a support surface in the method of Barron since it is recognized in the art that direct fiber application onto a screen complicates the removal process and degrades the strength of the preform, as shown for example by Kelman (Column 1,

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Lines 20-35). It is emphasized that Barron and Kelman are directed to the manufacture of molded objects via a resin transfer molding operation (analogous environment).

Regarding claims 2, 3, 32, and 33, the method of Barron does not include forced air at the support surface or a plenum system, which is defined as a technique in which a greater pressure, as compared to the outside environment, is created within a closed chamber.

As to claim 4, the method of Barron in view of Kelman would include spraying the respective components against a support surface.

Regarding claims 5-7 and 37, Barron suggests the use of chopped fiberglass (Column 5, Lines 35-40 and Lines 60-62).

With respect to claims 8, 11, and 12, the method Barron includes the concurrent spraying of reinforcing material and binder (Column 6, Lines 26-44).

As to claims 9, 10, 13-15, and 17-19, Barron (Column 6, Lines 26-44) suggests that the binder is conditioned or heated prior to contacting the reinforcing material. In this instance, Barron describes a preferred embodiment in which binder is sprayed through a heat source, such as a flame, prior to contacting the screen (or support surface in view of Kelman).

With respect to claim 16, Barron suggests the following: it is desirable to begin the binder melting process shortly before the fibers and the binder particles contact each other, since this assures some level of adhesion (Column 8, Lines 19-21). While the preferred method might be a pre-heating technique (before contact), the above

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noted language suggests that suitable adhesion between the binder and fibers can be obtained prior to the application of heat.

With respect to claims 20-22, 38, 39, and 41, as noted above, the use of a support surface would have been obvious in view of Kelman in order to eliminate the difficulties associated with direct fiber application onto screens. The support surface detailed by Kelman is seen to constitute a solid, vertical support surface as required by the claimed invention. Also, the application described by Kelman and Barron is performed in ambient air conditions.

Regarding claims 23 and 40, Kelman describes the support surface as a glass fabric material, such as a woven roving or a scrim (Column 1, Lines 40-50). These support surfaces are seen to constitute a surface having apertures or a perforated surface.

Regarding claims 24-29, Barron suggests "shaping" the preform prior to solidification, which occurs at the end of the resin transfer molding (RTM) process (Column 10, Lines 3-26). In this instance, Barron teaches (a) placing the preform in the mold, (b) injecting resin into said mold, and (c) curing or cooling the resin to form a solid composite part. With specific respect to claim 27, although Barron fails to expressly suggest the application of a vacuum before curing, this RTM technique is extremely well known and extensively used in the manufacture of a majority of molded articles. As noted above, Barron does suggest that the preform is shaped to match the contours of the mold- the use of a well-known vacuum means would assist in this shaping.

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As to claims 34-36, Barron states that sufficient heat (for the binder) is necessary to adhere the fibrous reinforcement material (Column 6, Lines 45-60). The region in which the binder is heated and subsequently contacted with the fibrous reinforcement material is analogous to the heat zone of the claimed invention. With specific respect to claim 36, the method of Barron includes a plurality of streams. It is noted that if applicant intends this language to require multiple binder streams or multiple reinforcing streams, such a method would have been obvious at the time of the invention (would be needed if more than one binder or reinforcing material is desired).

10. Claims 1-8, 11, 12, 20-23, 25-29, 31-33, and 37-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson (US 5,045,251) and further in view of Kelman. Johnson discloses a method of directly applying reinforcing material and binder to a screen to form a preform via a spray-up process, in which the respective components are concurrently sprayed (and thus mixed). In this instance, though, the components are directly sprayed onto the screen- there is no support surface (Column 3, Lines 36-62 and Column 5, Lines 5-38). One of ordinary skill in the art at the time of the invention would have found it obvious to include a support surface in the method of Johnson since it is recognized in the art that direct fiber application onto a screen complicates the removal process and degrades the strength of the preform, as shown for example by Kelman (Column 1, Lines 20-35). It is emphasized that Johnson and Kelman are directed to the manufacture of molded objects via a resin transfer molding operation (analogous environment).

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Regarding claims 2, 3, 32, and 33, in describing the spray-up process, Johnson suggests that the use of vacuum is optional (Column 9, Lines 5-10). Thus, the reference positively describes a method in which the respective components are concurrently deposited against a support surface or fabric layer without the use of vacuum or any additional air means.

With respect to claims 4, 8, 11, and 12, as noted above, Johnson describes the application as a "spray-up" process, in which a stream of binder material and a stream of reinforcement material are concurrently sprayed against a support surface (plurality of streams).

Regarding claims 5-7 and 37, Johnson describes the use of chopped fibers, including fiberglass (Column 8, Line 64 – Column 9, Line 10).

As to claim 20-22, 38, 29, and 41, the support surface described by Kelman is seen to constitute a vertical, solid support surface. In this instance, the components are applied at ambient temperatures.

Regarding claims 23 and 40, Kelman describes the support surface as a glass fabric material, such as a woven roving or a scrim (Column 1, Lines 40-50). These support surfaces are seen to constitute a surface having apertures or a perforated surface.

As to claim 25, the preform (combination of support surface and fiber/binder) is exposed to ambient air conditions, which is seen to constitute the cooling required by the claimed invention.

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Regarding claims 26-29, Johnson describes the placement of the thus formed preform (reinforcing material/binder and support surface assembly) into a mold cavity to perform a resin transfer molding operation (Column 5, Lines 5-38). After injecting uncured resin into the mold cavity, the resin is allowed to cure to form the composite part or molded part. With specific respect to claim 27, vacuum is conventionally used in resin transfer molding processes to assist in the flow of resin through the preform and additionally to maintain fiber reinforced layer against support surface.

11. Claims 9, 10, 13-19, and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson and Kelman as applied in claim 1 above and further in view of Barron. In describing the formation of the preform, Johnson, in view of Kelman, suggests that binder and reinforcement material can be sprayed or blown onto a support surface. While these references fail to suggest conditioning (e.g. heating) the binder, one of ordinary skill in the art at the time of the invention would have found it obvious to condition or heat the binder in order to manufacture a preform having superior compaction and uniformity as compared to well known binder application methods, as shown by Barron (Abstract, Column 2, Lines 59-63, and Column, Lines 1-10). In this instance, Barron describes the benefits of using such a heating technique as compared to additional methods using solvent-borne binders, powdered binders, and thermoplastic binders. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to condition the binder in accordance to the limitations of the claimed invention.

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As to claims 9, 10, 13-15, and 17-19, Barron (Column 6, Lines 26-44) suggests that the binder is conditioned or heated prior to contacting the reinforcing material. In this instance, Barron describes a preferred embodiment in which binder is sprayed through a heat source, such as a flame, prior to contacting the screen (or support surface in view of Kelman).

With respect to claim 16, Barron suggests the following: it is desirable to begin the binder melting process shortly before the fibers and the binder particles contact each other, since this assures some level of adhesion (Column 8, Lines 19-21). While the preferred method might be a pre-heating technique (before contact), the above noted language suggests that suitable adhesion between the binder and fibers can be obtained prior to the application of heat.

As to claims 34-36, Barron states that sufficient heat (for the binder) is necessary to adhere the fibrous reinforcement material (Column 6, Lines 45-60). The region in which the binder is heated and subsequently contacted with the fibrous reinforcement material is analogous to the heat zone of the claimed invention. With specific respect to claim 36, the method of Barron includes a plurality of streams. It is noted that if applicant intends this language to require multiple binder streams or multiple reinforcing streams, such a method would have been obvious at the time of the invention (would be needed if more than one binder or reinforcing material is desired).

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Conclusion


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Justin Fischer

January 26, 2004


JEFF H. AFTERGUT
PRIMARY EXAMINER
GROUP 1300